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Position Paper

Preparation for colonoscopy: Recommendations by an expert panel in Italy

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ABSTRACT

Background: Despite several guidelines on bowel preparation being available, their applicability in Italy is poorly investigated.
Aims: (1) To create expert-based recommendations for the Italian setting based on available international guidelines on bowel preparation for colonoscopy; (2) to assess consensus across the Italian endoscopy community.
Methods: The study was conducted in 2 phases: (a) statements formulation, (b) assessment of consensus. For the first phase, 6 topics related to bowel preparation were identified: (1) efficacy/tolerability; (2) timing; (3) assessment of quality of bowel preparation; (4) factors associated with inadequate preparation; (5) patient education and (6) impact of organisational factors. For each topic, statements were produced and voted by a panel of experts. For consensus assessment, the invited participants were asked to rate the statements. The statement achieved a good level of agreement when at least 70% of voters agreed with it.
Results: 25 statements were agreed in the first phase. Agreement was not achieved by the endoscopy community for 7 statements, mainly concerning practical aspects (i.e. strategies for management of patients with inadequate preparation, organisational factors).
Conclusion: A clinically relevant consensus was achieved on the main topics of bowel preparation, such as the choice of laxative and the time of administration, and it may help to homogenize the colonoscopy practice in Italy. Nevertheless, there are a few country-specific preparation-related issues that need to be addressed.
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1. Introduction

Colorectal cancer (CRC) is the second most common cancer amongst women and the third most common amongst men [1,2]. Both the incidence and mortality of CRC can be reduced by screening programmes including colonoscopy. Colonoscopy is the gold standard for CRC screening. Optimising the ability to protect against

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Table 1
Efficacy and tolerability of bowel preparations.

Question		Recommendation	I agree (%)	I do not agree (%)	Not applicable (%)	No answer (%)
1	Which bowel preparations have the best efficacy/safety profile?	Preparations containing PEG appear to have a better efficacy/safety profile than other preparations.	92.4	1.5	2.3	3.8
2	Which bowel preparations have the best tolerability with the same efficacy?	Low-volume preparations appear to have a non-inferior efficacy to high-volume PEG preparations and boast better patient tolerability.	90.1	3.8	0.8	5.3
3	Which bowel preparations require specific clinical assessment?	Sodium phosphate or sodium picosulphate can only be prescribed after clinical assessment of the patient	87	2.3	0.8	9.9
4	In order to obtain adequate colonic cleansing, which bowel preparation administration method should patients be recommended?	Split-dosing the bowel preparation guarantees better colonic cleansing in a higher number of patients than when the whole dose is administered the previous day. PEG administration has a better tolerability profile when it is split-dosed.	80.9	0.8	6.9	11.4
5	Are there any bowel preparations that make it possible to achieve adequate colonic cleansing if taken wholly the previous day, rather than with split-dose administration?	Split-dose administration improves the quality of colonic cleansing, regardless of the type of preparation used.	80.2	9.9	0.8	9.1

CRC is directly related to the quality of colonoscopy. The adenoma detection rate (ADR) is universally used to define a good-quality colonoscopy [3]. Colonoscopy performance and adequate mucosal visualisation are closely linked to the degree of intestinal cleanliness. Indeed, the quality of preparation is a key factor of the ADR and improves the results of screening tests. Despite this evidence, even in the most recent series, inadequate preparation is observed in up to 20% of all colonoscopies [4–6]. For this reason, national and international scientific societies and the "United States Multi-Society Task Force on Colorectal Cancer" have produced guidelines on bowel preparation before colonoscopy [1,2,7,8]. In Italy, the applicability of available guidelines is poorly investigated. The main purpose of this study was to perform a review of current guidelines issued by international scientific societies; to identify the most pertinent recommendations for the Italian setting by means of a consensus amongst experts; and to measure the agreement on these expert-derived recommendations on a broader Italian endoscopy community.

2. Methods

The project was carried out in 2 main phases.

2.1. Formulation of the recommendations

The project coordinators (G.C., R.C.) identified the main topics related to bowel preparation: (1) efficacy and tolerability; (2) the timing of preparation; (3) assessment of the quality of bowel preparation during colonoscopy; (4) factors associated with inadequate preparation; (5) patient education (as a factor for optimising the results of preparation) and (6) the impact of organisational factors on the quality of bowel preparation. For each topic, coordinators prepared specific questions, in order to direct bibliographic research. Nine experts (RC, EDG, CH, RM, PO, FR, AR, ER, GC) based on their previous scientific activity in the field of colonoscopy and in particular, of bowel preparation performed a literature search on the basis of specific questions and produced a series of statements, with particular reference to leading international guidelines published by international scientific societies and specific Italian requirements and/or critical issues. Experts were allowed to refer also to other publications when considered relevant. The statements generated were presented, discussed and voted in a meeting. The statements were accepted by the panel when approved by more than 80% of voters. When deemed to be particularly important, statements that were not accepted in their original form, were rewritten and voted on again. At the end of the meeting, the panel produced a document consisting of all the approved statements and a summary of the supporting literature.

2.2. Survey: final data collection

The survey was organised in order to evaluate any potential issue where Italian endoscopists did not agree with evidence based recommendations and to understand which barriers limit the adoption of international guidelines, if any. Participants in the survey were enrolled by invitation and were selected so as to obtain an equal distribution as regards geographical location, facility (hospital, university hospital), volume of the endoscopic procedures performed, and/or participation in screening programmes.

Participants were invited to rate each of the statements using the following criteria:

(a) I agree; (b) I do not agree; (c) I agree but this does not apply to the facility where I work.

A space for comments was provided underneath each recommendation. Participants in the rating process were allowed to give "no answer" if they felt that they did not possess the information needed to answer or if they did not have an opinion to express. The statement achieved a good level of agreement when at least 70% of the voters stated that they agreed with it. When "No answer" was given by less than 20% of the voters, it was considered relevant and the statement was not accepted, regardless of the percentage of participants expressing a rating. The rating process was anonymous as regards the individual endoscopist, but not geographical location, facility (hospital vs. university hospital), volume of endoscopic procedures, and/or participation in organised screening programmes. Data analysis was performed by an independent agency (Mattioli 1885 srl).

3. Results

The final document produced in the first phase of the project consisted of 25 statements (Tables 1–6). The results of the agreement for each statement are shown in Tables 1–6.

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Table 2
Timing of preparation.

#	Question	Recommendation	I agree (%)	I do not agree (%)	Not applicable (%)	No answer (%)
6	What is the ideal interval, from the administration of bowel preparation, within which the procedure should be performed?	Split-dosing the preparation loses its efficacy as time passes; the ideal interval for performance of the colonoscopy is 4–6 h after the end of administration of the second dose.	87	2.3	1.5	9.2
7	In patients due to have colonoscopies in the late morning, which bowel preparation administration method can be recommended?	For colonoscopies scheduled for the late morning or afternoon, split-dose PEG administration provides a degree of cleanliness that is non-inferior to that obtained with same-day administration; in both cases, the colonoscopy should ideally be performed 4–6 h after the end of the administration of the second dose of bowel preparation.	81.7	9.9	1.5	6.9

Table 3
Assessment of bowel preparation quality during colonoscopy.

#	Question	Recommendation	I agree (%)	I do not agree (%)	Not applicable (%)	No answer (%)
8	Why is it advisable to routinely record (in the endoscopy report) the quality of the bowel preparation during the colonoscopy?	The quality of the bowel preparation is an indicator of the efficacy and efficiency of the colonoscopy and must therefore always be noted in the records.	91.5	0.8	0.8	6.9
9	What is the best way to measure the quality of colonic cleansing?	A validated, standard scale should be used to rate colonic cleansing	87.7	4.6	0.8	6.9
10	In clinical practice, when should the quality of bowel preparation be measured?	In clinical practice, it is advisable to assess the quality of colonic cleansing after any lavage and aspiration.	81.7	11.4	0.8	6.1
11	Which validated scale should preferably be used in clinical practice?	The validated scales for assessing colonic cleansing most frequently used in clinical trials include the Harefield Cleansing Scale (HCS) and the Boston Bowel Preparation Scale (BBPS). Use of the BBPS is advisable in clinical practice, on account of its proven correlation with clinical outcomes.	89.3	2.3	2.3	6.1
12	On the BBPS, what total score should be achieved in order to define the quality of cleanliness as adequate?	A total BBPS score of $\geq$6 and no segment <2 defines an adequate degree of bowel cleanliness.	91.6	1.5	1.5	5.4
13	What is the target% of colonoscopies with adequate bowel cleanliness to be achieved at each endoscopy centre?	It is advisable to achieve an adequate degree of intestinal cleanliness in at least 85% of colonoscopies performed at each centre.	87	4.6	0.8	7.6

3.1. Efficacy and tolerability of bowel preparations

1-Question: Which bowel preparations have the best efficacy/safety profile?

Statement: Preparations containing PEG (polyethylene glycol) appear to have a better efficacy/safety profile than other preparations.

Most of the evidence available in the literature refers to preparations containing PEG. Both European and American guidelines stress that PEG has a better benefit/risk profile than preparations containing sodium phosphate [1,2,8]. Meta-analyses comparing the two types of preparation showed that sodium phosphate was non-inferior or superior to those containing PEG [2,8]. Nevertheless, the clinically relevant risk of renal insufficiency associated with sodium phosphate constitutes a contraindication to its indiscriminate use in open access colonoscopy settings. Preparations containing sodium picosulphate have shown almost equivalence in terms of bowel cleanliness. Electrolyte alterations associated with preparations containing sodium picosulphate have been also described [9,10]. Further bigger studies are needed in order to better define the safety profile of sodium picosulphate preparation.

2. Question: Which bowel preparations have the best tolerability with the same efficacy?

Statement: Low-volume preparations appear to have a non-inferior efficacy to high-volume PEG preparations and boast better patient tolerability.

The evidence found in literature concerning low- and high-volume PEG preparations is controversial. Most of the evidence available at the current time refers to PEG. Both European and American guidelines recognise that low-volume PEG preparations are characterised by better patient tolerability than high-volume ones [2,8,10].

3. Question: Which bowel preparations require specific clinical assessment?

Statement: Sodium phosphate or sodium picosulphate can only be prescribed after the patient has been clinically assessed.

In selected cases and in specific clinical settings, sodium phosphate or sodium picosulphate preparations may be adopted. In these cases, in order to minimise renal damage, it is essential to exclude subclinical renal insufficiency, hydrate the patient and monitor renal function after the procedure [1,2,7,8].

4. Question: In order to obtain adequate colonic cleansing, which bowel preparation administration method should patients be offered?

Statement: Split-dose administration of the bowel preparation guarantees better colonic cleansing in a higher number of patients than when the whole dose is administered the day before the proce-

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Table 4
Factors associated with inadequate preparation.

#	Question	Recommendation	I agree (%)	I do not agree (%)	Not applicable (%)	No answer (%)
14	Given the key importance of the quality of colonic cleanliness in terms of clinical results, cost restrictions and organisational impact, what is the first action to be taken in an endoscopy facility in order to guarantee its efficiency?	It is advisable for each facility to organise an internal audit for the management on bowel cleanliness	61.8	1.5	0.8	35.9
15	Is it useful to select patients at risk of inadequate cleanliness with the standard preparation routinely used at the centre?	Each centre should have an organisational procedure in place for the identification of patients who are "at risk of inadequate cleanliness" before prescribing the preparation.	51.9	1.5	3.1	43.5
16	How should the preparation of patients at risk of inadequate cleanliness with the standard preparation routinely used at the centre be individualised?	Each centre should arrange a more "aggressive" individualised preparation regimen to be prescribed in cases in which patients are at risk of inadequate cleanliness.	68.7	5.3	0.8	25.2
17	How should patients at risk of inadequate cleanliness due to non-compliance with the instructions provided be identified before colonoscopy?	Effective patient compliance with the instructions provided should be recorded before the colonoscopy is performed	64.1	1.5	0.8	33.6
18	What should be done if the colonoscopy reveals inadequate cleanliness?	A local strategy should be adopted for the recovery of patients with inadequate cleanliness	80.9	2.3	0.8	16
19	What should be recorded in the report if the colonoscopy reveals inadequate cleanliness?	Adequate measures should be implemented for the recovery of poorly prepared patients	84	2.3	0.8	12.9

Table 5
Patient education as a factor for optimising the results of preparation.

#	Question	Recommendation	I agree (%)	I do not agree (%)	Not applicable (%)	No answer (%)
20	Can providing the patient with correct and accurate information improve compliance with the entire colonoscopy preparation procedure?	Patient information and the patient's willingness to participate actively in the preparation process can improve the quality of intestinal cleanliness. Medical staff must provide the patient with both written and verbal instructions on all aspects of preparation for colonoscopy and stress the importance of strict compliance.	77.1	0.8	0.8	18.3
21	What dietary indications are recommended for bowel preparation before colonoscopy?	A low-fibre diet on the day before the colonoscopy is non-inferior to and is better tolerated than a clear liquid diet alone. It is advisable for patients to have a normal breakfast in the morning, a low-fibre lunch and a clear liquid dinner the day before the colonoscopy. Clear indications concerning low-fibre foods and clear liquids should be provided as written instructions.	79.4	11.5	3.8	5.3

dure. PEG preparation administration has a better tolerability profile when a split-dose regimen is used.

Four meta-analyses analysed the degree of colonic cleanliness in relation to the timing of preparation administration [10–13] and concluded that split-dose regimen of bowel preparation significantly improves cleansing level when compared to single-dose regimens. Four studies evaluated abdominal discomfort associated to different regimens of PEG preparations: abdominal discomfort was greater with single dose regimens, whereas night-time rest was more affected by split-dose administration [11–14].

5. *Question: Are there any bowel preparations that make it possible to achieve adequate colonic cleansing by taking the whole dose the day before the procedure, rather than split-dose administration?*

Statement: Split-dose administration improves the quality of colonic cleansing, regardless of the type of preparation used.

Two meta-analyses evaluated the degree of colonic cleansing in relation to the different types of preparation used: PEG 4 L, PEG 2 L, sodium phosphate, sodium picosulphate [10,1]. Split-dose administration was found to allow the best degree of colonic cleanliness, regardless of the type of bowel preparation used. In addition, one recent Italian prospective study showed that split-dose administration is also associated with a higher detection rate for clinically significant neoplastic lesions, and therefore, improves the efficacy of colonoscopy. Therefore, the adoption of a split-dose regimen should be strongly recommended and implemented [3].

3.2. Timing of preparation

6. Question: What is the ideal interval, from the administration of the bowel preparation, within which the procedure should be performed?

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Table 6
The impact of organisational factors on the quality of bowel preparation.

#	Question	Recommendation	I agree (%)	I do not agree (%)	Not applicable (%)	No answer (%)
22	Which method for disseminating information concerning bowel preparation can improve the quality of bowel cleanliness taking into account patient characteristics?	The information on preparation provided should be clear and contain specific, detailed instructions and • should be given to the patient when the procedure is booked, indicating one or two recommended preparations and explaining what is meant by split-dose administration; • should be printed with an "attractive" layout with clear and very straight-forward graphics (e.g.: short phrases, product names in bold type, explanatory diagrams or even cartoon illustrations); should include a telephone number that patients can use if they need advice; should include the advice that the patient should contact his/her GP if he/she experiences particular clinical conditions; • should also be available online, accompanied by an explanatory video if possible; should include a "recommended" preparation and alternative options to suit the patient's individual condition; • the information on bowel preparation should empower the patient by explaining the risks and disadvantages of inadequate bowel preparation (e.g. non-diagnostic procedures to be repeated, increased risk of complications, explain the rationale of split-dose administration).	67.9	2.3	3.8	26
23	What approaches to the organisation of colonoscopy sessions may guarantee patient compliance with adequate bowel preparation?	Split-dose administration is the recommended regimen. Preparation should therefore be differentiated according to appointment time.	73.3	1.5	1.5	23.7
24	What organisational measures can be taken by colonoscopy units to improve patient compliance and obtain adequate preparation?	Direct relations between patients and colonoscopy facilities should be facilitated by: • dedicated telephone number for use at certain times • toll-free number with at least one answerphone • dedicated websites with explanatory videos indicated on the preparation information sheet given to patients by the central booking service or other facility • flags or highlighted utilities on the Unit's website providing specific instructions on bowel preparation • planning of morning appointments: • EGDSs and colonoscopies on inpatients should be performed first to avoid the inconvenience of preparation administration very early in the morning, whereas outpatient colonoscopies should be performed after 09:30.	47.3	0.8	3.8	48.1
25	What kind of community intervention may favour correct bowel preparation by patients?	The awareness of general practitioners, pharmacies and central booking services should be improved by supplying them with printed or electronic media providing full details on preparation, dedicating particular attention to the preparation administration times and use of split-dose regimens.	80.1	4.6	0.8	14.5

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Statement: With split-dose regimens, the preparation loses its efficacy as time passes; the ideal interval for performance of colonoscopy is 4–6 h after the end of administration of the second dose.

A meta-analysis evaluated the effect of the time elapsing between administration of the preparation and the start of the colonoscopy session [13]. The efficacy of the intestinal preparation administered according to a split-dose regimen decreases with an increase in the time elapsing between the start of the colonoscopy session and colonoscopy must be performed no more than 4–6 h after the administration of the second dose of the bowel preparation [13,15].

7. Question: In patients due to have colonoscopies in the late morning or afternoon, which bowel preparation administration regimen can be recommended?

Statement: For colonoscopies scheduled in the late morning or early afternoon, split-dose PEG administration provides a cleansing quality that is non-inferior to that obtained with same-day administration; in both cases, the ideal interval within which the colonoscopy should be performed is 4–6 h after the end of the administration of the second dose of bowel preparation.

Seven studies including 1608 patients analysed the degree of colonic cleanliness obtained with same-day versus split-dose administration of preparation [16–22]. In 6 studies [16–21], a similar degree of cleanliness with both administration methods was reported, whereas in one study [22], the degree of cleanliness with split-dose administration was more efficacious than with a same-day regimen. The time elapsing between the end of the administration of preparation and the start of the procedure, with both regimens, was usually between 3 and 4 h.

3.3. Assessment of bowel preparation during colonoscopy

8. Question: Why is it advisable to routinely record (in the endoscopy report) the quality of bowel preparation during the colonoscopy?

Statement: The quality of bowel preparation is an indicator of the efficacy and efficiency of colonoscopy and must therefore always be noted in records.

Inadequate preparation is associated with poorer procedure performance as it deteriorates 2 main colonoscopy quality indicators – cecal intubation and ADR –, in addition to increasing the risk of complications [23–25].

Whereas surveillance intervals are clearly defined in case of adequate preparation, when the quality of preparation is inadequate, optimal surveillance intervals are not uniformly defined. International guidelines recommend reducing surveillance intervals in case of colonoscopy with inadequate preparation and repeating it one year later.

9. Question: What is the best way to measure the quality of colonic cleansing?

Statement: A validated, standard scale should be used to rate colonic cleansing.

Good clinical practice suggests the routine adoption of a validated bowel preparation assessment scale [25]. The type of scale used should be specified in the report.

10. Question: In clinical practice, when should the quality of bowel preparation be measured?

Statement: In clinical practice, it is advisable to assess the quality of colonic cleansing after any lavage and aspiration.

In routine colonoscopy the assessment of bowel preparation quality should be performed after any manoeuvres involving the aspiration and/or lavage of any liquid and solid residues.

11. Question: Which validated scale should preferably be used in clinical practice?

Statement: The validated scales for assessing colonic cleansing most frequently used in clinical trials are the Harefield Cleansing Scale (HCS) and the Boston Bowel Preparation Scale (BBPS). Use of the BBPS is advisable in clinical practice, on account of its proven correlation with clinical outcomes.

The Boston Scale (BBPS) was proven to provide a valid and reliable assessment of the quality of bowel preparation during colonoscopy [26–28]. Higher BBPS scores are associated with a higher "polyp detection rate" and shorter insertion and withdrawal times during colonoscopy. Other scales (such as the Aronchick and Ottawa scales) are recommended in clinical trials since they measure the efficacy of preparations regardless of the additional manoeuvres performed during endoscopy to clean the colon.

12. Question: What total BBPS score must be achieved in order for the quality of cleanliness to be described as adequate?

Statement: A total BBPS score of ≥6 and no segment with a score of <2 defines an adequate degree of bowel cleanliness.

The BBPS provides a numerical score and evaluates the quality of the preparation obtained after aspiration and lavage. BBPS was demonstrated to be associated with a good correlation with important clinical outcomes such as the polyp detection rate and surveillance interval indication [28,29].

13. Question: What is the target% of colonoscopies with adequate bowel cleanliness to be achieved at each endoscopy centre?

Statement: It is advisable to achieve an adequate degree of intestinal cleanliness in at least 85% of colonoscopies performed at each centre.

Adequate preparation should be achieved in at least 85% of colonoscopies performed. Achieving this adequate preparation rate is considered a requisite for quality colonoscopy and is recommended by the most important American Scientific Societies (ASGE and AGA) [1,2,25].

3.4. Factors associated with inadequate preparation

18. Question: What should be done if colonoscopy reveals inadequate cleanliness?

Statement: A local strategy should be adopted for the recovery of patients with inadequate cleanliness.

The management of patients, with inadequate preparation, is a matter of fundamental importance for good clinical practice. It is important to have a routine, scheduled management model for dealing with preparation failure. The particular organisational solution cannot be standardised, rather it must be devised by the facility to suit local organisation, by defining the procedure follow-up time after failure and the preparation procedures recommended for the second attempt.

19. What should be recorded in the report if the colonoscopy reveals inadequate cleanliness?

Statement: Adequate measures should be implemented for the recovery of poorly prepared patients.

The importance of poor bowel cleanliness for the clinical management of the patient's health problem means that the patient and his/her general practitioner must receive clear information on how to manage the subsequent programme. More specifically, this information must be included in the report and must not be restricted to reporting the inadequacy of the preparation rather it must also contain instructions on the subsequent appointment and appropriate, individualised methods of preparation.

3.5. Patient education as a factor for optimising the results of preparation

20. Can providing the patient with correct and accurate information improve compliance with the entire colonoscopy preparation procedure?

Statement: Patient information and the patient's willingness to participate actively in the preparation process can improve the quality

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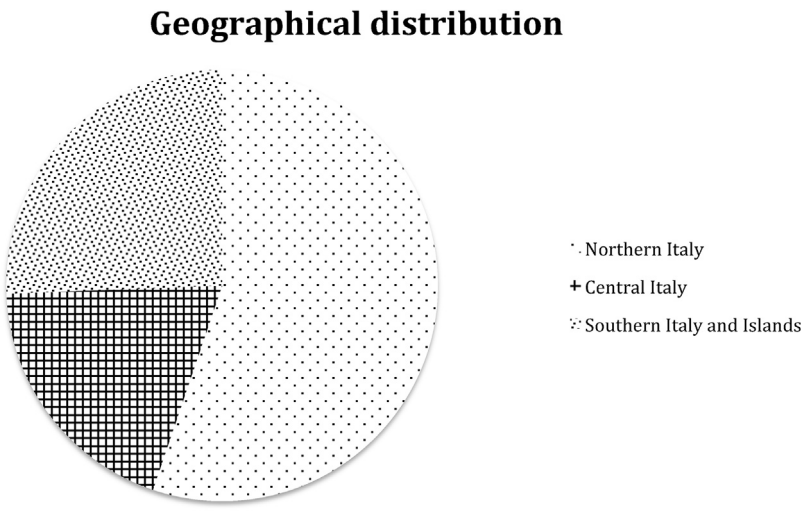

Fig. 1. Geographical location of endoscopic centres involved in the survey.

of intestinal cleanliness. Medical staff must provide the patient with both written and verbal instructions on all aspects of preparation for colonoscopy and stress the importance of complying with them carefully.

A study on adults over 55 years of age revealed that poor "personal involvement" (i.e. the extent to which the patient is involved in his/her health) was found to be an important independent risk factor of suboptimal preparation [30]. Special measures should be implemented for these individuals in order to increase compliance with the instructions for preparation. ESGE and ASGE strongly suggest providing the patient with verbal instructions on preparation together with simple and easy-to-follow written instructions, which should be in the subject's native language where possible [1,2,30].

21. Question: What dietary indications are recommended for bowel preparation before colonoscopy?

Statement: A low-fibre diet on the day before colonoscopy is non-inferior to and is better tolerated than a clear liquid diet alone. It is suggested for patients to have a normal breakfast in the morning, a low-fibre lunch and a clear liquid dinner the day before colonoscopy. Clear indications concerning low-fibre foods and clear liquids should be provided as written instructions.

There are few certainties as to the diet to be adopted before colonoscopy [31–35]. Two very recent meta-analyses showed that a low-fibre diet provides a preparation quality that is non-inferior to a clear liquid diet and is associated with better tolerability and compliance [35–40]. There is no clear evidence in the literature that prolonging dietary restrictions for more than one day before colonoscopy improves the quality of bowel preparation. Compliance with dietary recommendations can be improved by providing written instructions on the foods and fluids permitted. In one recent meta-analysis, the use of an education leaflet including detailed indications on low-fibre foods and clear fluids led to a better-quality preparation than that obtained in patients who received more general instructions [41].

3.6. The impact of organisational factors on the quality of bowel preparation

25. What kind of community intervention may favour correct bowel preparation by patients?

Statement: The awareness of general practitioners, pharmacies and central booking services should be improved by supplying them with printed or electronic media providing full details on preparation, dedicating particular attention to preparation administration times and use of split-dose regimens.

In order to optimise bowel preparation for colonoscopy, there should be a close relationship with general practitioners, who should be given detailed information on the different bowel preparations, also including potential alternatives to the "recommended product" with the appropriate warnings for use.

4. Agreement

One hundred and thirty-one Digestive Endoscopy Centres were invited to take part in statement ratings. One hundred and twenty-five (95.4%) centres accepted the invitation and voted for at least 50% of the statements. Geographic distribution is shown in Fig. 1. One hundred and sixteen (92.8%) centres were non-academic. 60% of centres (n = 75) are involved in bowel cancer screening programmes. Eighteen out of twenty-five statements obtained a good level of agreement (>70% of raters). For 7 statements agreement was not achieved. It is interesting to note that in all 7 of these statements the agreement threshold was not met not because participants disagreed with the statement, rather because they did not answer. The statements that did not meet the agreement threshold mainly concerned practical aspects such as the strategies for the management and recovery of patients with inadequate bowel preparation and the impact of organisational factors on the quality of bowel preparation. The geographical distribution of the areas of origin of the endoscopists that did not answer and/or did not agree with the statement was homogenous throughout Italy.

5. Discussion

For the first time in Italy, agreement on statements based on the main international guidelines for bowel preparation was evaluated among a representative group of Italian Endoscopy Centres. By nature, international guidelines are designed to reflect different national requirements, and are not intended to address local situations that may differ and have different needs and organisational systems. In this study, a group of experts summarised the leading international guidelines and drew up a series of suggestions considered to be particularly relevant reflecting national needs. The results of the present project are relevant for several reasons. First, practical suggestions were formulated to meet the specific needs of clinical practice in Italy. Second, the group of experts identified two particular areas representing the critical aspects of the Italian

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situation: patient education and organisational factors. Although evidence exists regarding the need to individualise bowel preparation regimens and arrange "preferential" programmes for patients with inadequate preparation, the best strategy to be adopted after a colonoscopy with inadequate preparation is not clearly defined, nor are there any standardised procedures that Digestive Endoscopy Centres have to adopt in order to identify patients at risk of inadequate bowel preparation. As far as these topics are concerned, the working group drew up a series of statements that should serve as a stimulus to improve bowel preparation in order to optimise colonoscopy. Third, the consensus assessed in the Italian endoscopy community suggests a high level of applicability of the international guidelines with little if any adaptation, at least on a theoretical level. Indeed, all statements concerning these subjects achieved a very high level of agreement. In particular, when compared with ESGE and ASGE guidelines, the accepted recommendations included a full adoption of a split regimen, the higher safety profile of PEG preparations, the need for oral and written instructions, and use of validated and segmental scores of bowel preparation. However, such a high degree of consensus does not necessarily translate in its adoption in clinical practice, so that further studies are needed. Fourth, the survey suggests that there are certain critical matters in Italy that need to be dealt with. It is interesting to note that the statements that did not achieve an agreement nationwide mainly concerned the strategies for the management of patients with inadequate bowel preparation and the impact of organisational factors on the quality of bowel preparation. However, this may in part be related with the very low evidence available in the literature on this topic, and in particular with the lack of randomized trials. With the exception of certain differences, the information is fairly uniform for Northern, Central and Southern Italy. The information is in itself relevant because it confirms the presence of certain critical organisational aspects, more specifically: (a) it reveals a number of shortcomings in the patient information process that should not simply involve giving him/her a list of preparations, rather it should involve patient counselling and an empowerment process; (b) it highlights the need for digestive endoscopy facilities to adopt audit procedures regarding the management of bowel preparation; (c) it reveals the need to create organisational facilities able to identify patients who are at risk of inadequate preparation, to individualise bowel preparation regimens and evaluate compliance with preparation before starting colonoscopy and, (d) it indicates the need to educate and train doctors and nursing staff on these matters.

Conflict of interest

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